

THAT WHICH IS CLAIMED:

1. A control surface controller force measurement system for an aircraft, comprising:
 - a control surface interface having a range of motion for providing pilot input
 - 5 mechanical force for positioning at least one aerodynamic control surface on an aircraft;
 - a first mechanical link being pivotable about a first pivot and interconnected to the control surface interface for transferring mechanical force applied to the control surface interface;
 - 10 a second mechanical link interconnecting the control surface interface to the first mechanical link, the second mechanical link being pivotable with respect to the control surface interface at a second pivot; and
 - a force transducer for transducing the mechanical force applied to the control surface interface to a representative electrical signal, the force transducer having first
 - 15 and second portions and being operably interconnected at the first portion to the first mechanical link and operably interconnected at the second portion to the second mechanical link and the interconnections to the first and second portions being independent of the second pivot.
2. The control surface controller force measurement system according to
- 20 claim 1, further comprising a flight control system for receiving the electrical signal and correlating that electrical signal to a value of the force applied to the control surface interface.
3. The control surface controller force measurement system according to claim 1, wherein the control surface interface comprises a controller interface selected
- 25 from the group consisting of a rudder pedal, a yaw and roll control wheel, and a pitch control column.
4. The control surface controller force measurement system according to claim 1, wherein the force transducer comprises a linear variable differential
- transformer (LVDT) comprising a magnetic core disposed within magnetic windings,
- 30 the core and windings permitting movement relative to one another, and a spring biased against movement of the core with respect to the windings.

5. The control surface controller force measurement system according to claim 4, wherein the spring is disposed in the LVDT.
6. The control surface controller force measurement system according to claim 4, wherein the spring is disposed interconnecting the first and second mechanical links.
7. The control surface controller force measurement system according to claim 1, further comprising a third mechanical link operably interconnecting the force transducer to the second mechanical link, the third mechanical link being in a fixed relationship to the second mechanical link
8. The control surface controller force measurement system according to claim 1, further comprising a yoke interconnecting the control surface interface to the first mechanical link.
9. The control surface controller force measurement system according to claim 8, wherein the control surface interface comprises right and left pedals, the right pedal being operably interconnected to one portion of the yoke, the left pedal being operably interconnected to an opposed portion of the yoke.
10. A control surface controller force measurement system for an aircraft, comprising:
- a control surface interface having a range of motion for providing pilot input mechanical force for positioning the aerodynamic control surfaces on an aircraft;
 - an articulated crank interconnected to the control surface interface for transferring mechanical force applied to the control surface interface, the articulated crank comprising at least two mechanical links operably interconnected at a pivot; and
 - a force transducer for transducing the mechanical force applied to the control surface interface to a representative electrical signal, the force transducer being operably interconnected to both the at least two mechanical links independent of the pivot.
11. The control surface controller force measurement system according to claim 10, further comprising a flight control system for receiving the electrical signal

and correlating that electrical signal to a value of the pilot input force applied to the control surface interface.

12. The control surface controller force measurement system according to claim 10, wherein the control surface interface comprises a controller interface
5 selected from the group consisting of a rudder pedal, a yaw and roll control wheel, and a pitch control column.

13. The control surface controller force measurement system according to claim 10, wherein the force transducer comprises a linear variable differential
transformer (LVDT) comprising a magnetic core disposed within magnetic windings,
10 the core and windings permitting movement relative to one another, and a spring biased against movement of the core with respect to the windings.

14. The control surface controller force measurement system according to claim 13, wherein the spring is disposed in the LVDT.

15. The control surface controller force measurement system according to claim 13, wherein the spring is disposed operably interconnecting the at least two
mechanical links.

16. The control surface controller force measurement system according to claim 10, further comprising a yoke interconnecting the control surface interface to
the articulated crank.

20 17. The control surface controller force measurement system according to claim 8, wherein the control surface interface comprises right and left pedals, the right pedal being operably interconnected to one portion of the yoke, the left pedal being operably interconnected to an opposed portion of the yoke.

18. A control surface controller force measurement system for an aircraft,
25 comprising:

a control surface interface having a range of motion for providing pilot input mechanical force for positioning the aerodynamic control surfaces on an aircraft;

an articulated crank interconnected to the control surface interface for transferring mechanical force applied to the control surface interface, the articulated

crank comprising a first mechanical link and a second mechanical link, first and second links being operably interconnected at a pivot;

5 a linear variable differential transformer having a core and a magnetic winding in movable relationship to one another, the magnetic winding being mechanically interconnected to the first mechanical link independent of the pivot, the magnetic winding being mechanically interconnected to the second mechanical link; and

10 a spring operably interconnecting the first and second mechanical links and biased in opposition to movement of the core relative to the magnetic winding, wherein a relative position between the core and magnetic winding produces a electrical signal representative of the mechanical force.

19. The control surface controller force measurement system according to claim 18, further comprising a flight control system for receiving the electrical signal and correlating that electrical signal to a value of the mechanical force applied to the control surface interface.

15 20. The control surface controller force measurement system according to claim 18 wherein the control surface interface comprises a controller interface selected from the group consisting of a rudder pedal, a yaw and roll control wheel, and a pitch control column.

20 21. The control surface controller force measurement system according to claim 18, wherein the spring is disposed in the LVDT.

22. The control surface controller force measurement system according to claim 18, further comprising a yoke interconnecting the control surface interface to the articulated crank.

25 23. The control surface controller force measurement system according to claim 22, wherein the control surface interface comprises right and left pedals, the right pedal being operably interconnected to one end of the yoke, the left pedal being operably interconnected to an opposed end of the yoke.